ViewPoint

One Health and Climate Change- Malawi Clinicians' Current and Next Frontiers in lung adenocarcinoma

Adamson S. Muula[1,2,3], Dzinkambani Kambalame[1,4]

1. Department of Community and Environmental Health, School of Global and Public Health, Kamuzu University of Health Sciences, Malawi
2. Editor-in-Chief, Malawi Medical Journal
3. President, East, Central and Sothern Africa (ECSA) College of Public Health Physicians
4. Public Health Institute of Malawi (PHIM), Lilongwe, Malawi

Medical doctors and other clinician cadres such as clinical officers and medical assistants are key, certainly not the only, health professionals who need to keep an ear to the ground in understanding, weighing in and contributing to wider health matters. Being a doctor for instance, requires extremely high levels of clinical technical skills, in the core area of medicine (and surgery). There exists of course a constrained view among some, especially in the clinical cadres that a clinician must be effective in the limited confines of the "bed side". These colleagues believe that the closer to the bedside one is, the more faithful to their calling they are. Those who show interest in broader societal and professional issues such as health systems practice, research (more so if it is not clinical research) and advocacy are viewed as having betrayed the "calling". In thinking and doing so however, doctors clearly miss an important component of being a doctor. The education and training of a medical doctor is so comprehensive that if done effectively, covers much more terrain than just clinical medicine. To be sure, clinical medicine is important and we can argue that well-trained and committed doctors are a critical and essential part of the health system. When doctors are not available, or in short supply or not committed to their calling, less than optimal health outcomes can be guaranteed.

Among the many themes or focus areas which Malawian doctors should seriously consider learning about and contributing are: Planetary and One Health, Climate change, Biodiversity loss and health systems engineering and re-engineering. The leadership that doctors often have overall in the health system, must be brought to bear.

Planetary Health

Planetary health is a rapidly growing field that focuses on the interconnectedness of human health and the health of the planet[1-3]. In One health, the concept that human health is closely linked to the natural systems on which it depends is the focus[4-6]. In addition, the health of animals and the natural systems is also dependent on human actions[7-9].

Climate Change

Climate change is a long-term "change" in the average weather (temperature, rainfall) patterns that have come to define Earth's local, regional and global climates. While the rising global temperatures are part of this there are many other impacts of climate change which should be of interest to doctors. These include:

- Biodiversity loss
- Increasing ocean temperatures, levels, and acidity
- Melting of sea ice and mountain glaciers
- More frequent and intense natural disasters (including forest fires, hurricanes and cyclones, heat waves, droughts, floods, and unpredictable precipitation)
- Changes in ecosystem characteristics (such as growing seasons, flowering times, and bird migrations)

In terms of global warming, this refers to the long-term heating of Earth's surface. This has been observed for centuries, wayback before the industrial revolution. However, the industrial revolution accelerated global warming. Global warming occurs in part, when fossil fuels are burned, they release heat-trapping greenhouse gases into Earth's atmosphere. These gases prevent solar energy from being radiated back into space, causing a "greenhouse effect." The greenhouse effect is a natural process that is necessary to support life on Earth. However, the unnatural buildup of greenhouse gases in the atmosphere, due to human activities, is disrupting this delicate balance.

The most common causes of climate change are anthropogenic, that is, human caused, through the production of greenhouse gases[10-12]. These gases are released through fossil fuel combustion, deforestation, and land-use changes (carbon dioxide), agriculture, natural gas production and transport, and landfills (methane), agriculture, industrial processes, and the burning of fossil fuels (nitrous oxide) and the production and use of products such as refrigerators, air conditioners, and electrical equipment (fluorocarbons). In the unavoidable interactions between patients, clients and communities, doctors may have a ready platform at which some of these things can be presented or discussed with the willing participants.

Climate change can also be caused by non-human causes[13]. Some of the examples of factors contributing to climate change are: volcanic eruptions, changes in the earth's orbit and solar variability. Large volcanic eruptions can release massive amounts of ash, sulphur dioxide, and other gases into the atmosphere, reflecting sunlight and cooling the planet. Changes in earth's orbit around the sun can affect the amount of solar energy the planet receives, leading to changes in climate. In addition, changes in the sun's energy output can impact earth's climate. All these are not due to human action, at least we doubt they are.

Key Principles of Planetary Health

There are several key principles to planetary health. These are:

1. Interconnectedness: Human health is intimately connected to the health of the planet.
2. Sustainability: Human activities must be performed with

https://dx.doi.org/10.4314/mmj.v38i2.14

the understanding to avoid harm the planet's natural systems.

3.Equity: There is need for equity and justice in access to and use of resources. We are all in together on the planet and each of use ought to have equal claim and access to it.

4.Prevention: Planetary health focuses on preventing harm to human and planetary health, rather than just treating the symptoms and sign. As we talking about prevention, it is important to consider carefully the different stages or phases of prevention: primary, secondary and tertiary.

Climate Change

Climate change is largely what had been viewed as global warming in the not so distant past[14]. It is a major threat to planetary health, with impacts on human health, ecosystems, and economies[15]. Malawi is expected to experience a temperature increase of 2-3°C by 2050[16], leading to more frequent and severe heatwaves. In addition, there it is expected that variable rainfall patterns will impact agricultural productivity, leading to food insecurity and economic losses.

Malawi is prone to floods, droughts, and storms, which are expected to increase in frequency and intensity due to climate change. Climate change will alter the distribution and prevalence of vector-borne diseases such as malaria, dengue fever, and chikungunya. In addition, water-borne diseases are likely to increase; changes in rainfall and temperature will contaminate water sources will increase the risk of water-borne diseases such cholera and typhoid fever.

Many Malawian doctors may not have encountered heat-related illnesses or they have but may not have diagnosed the same. If you asked me how come I know this, I would certainly fall short as this is a mere opinion. However, in the time I have been in this country, I am yet to hear that a friend and an acquaintances went to hospital, or had been hospitalised or died from a heat-related illness (other than a straight burn from fire or scalding). As a result of climate change, increased temperatures will lead to more heat-related illnesses, particularly among vulnerable populations like the elderly and young children.

Medical doctors can decide whether they want to contribute to the prevention aspects of the illnesses and injuries emanating from these disasters, or want to want by the bedside and receive the patients whenever such illnesses and injuries occur.

Opportunities for Action

Medical doctors are among the leaders in any health systems. When confronted with challenges, Malawi medical doctors do not shy away from responsibility as they are resilient, committed, can be focussed and pragmatic. I opine though that many doctors have not have the chance to know about planetary health and climate in order for them to take up their rightful places in these matters. The following are the suggested opportunities and actions that doctors may consider to be involved in:

1. Education and Awareness: there is the saying that "what you don't know doesn't exist." For some or even many, Malawian doctors the constructs of planetary health and climate change have not been introduced to them. This may have emanated that the medical curricula they underwent, the professional socialisation they are having, including the society and associations to which they belong, do not consider planetary health and climate change as relevant issues. This ignorance of course, must be addressed.

2.Research and Education: The identification of research themes on a specific topic is easier when we are aware of the existing knowledge, when in turn inform the gaps that exist. Medical doctors should engage in and support research and education on planetary health to raise awareness and build capacity.

3.Policy and Advocacy: Once we are convinced that planetary health and climate change are legitimate health topics, we still be more able to advocate for policies that support planetary health, such as climate change mitigation and adaptation strategies.

4.Community Engagement: In this strand, I suggest that we be more liberal and ecumenical. We need to conduct stakeholder mapping and analysis in order to identify all the relevant players that can interface with medical doctors in the areas of planetary health and climate change. In so doing, we will be able to engage with such communities to promote sustainable practices and support climate-resilient development.

5.Collaboration and Partnerships: Many medical students are taught to "never say never". There can never be too much collaboration or partnership development. Foster collaboration and partnerships among stakeholders to address planetary health challenges.

References

1. Mago A, Dhali A, Kumar H, Maity R, Kumar B. Planetary health and its relevance in the modern era: A topical review. SAGE Open Med [Internet]. 2024; Available from: https://journals.sagepub.com/doi/pdf/10.1177/20503121241254231

2. Rossa-Roccor V, Acheson E, Andrea-Rivas F, Coombe M, Ogura S, Super L, Hong A. Mission accomplished? A scoping review and bibliometric analysis of the term "planetary health" in the peer-reviewed literature. Lancet Planet Health [Internet]. 2019; Available from: http://www.thelancet.com/article/S2542519619301603/pdf

3.Fresán U, Sabaté J. Vegetarian diets: Planetary Health and its alignment with Human Health. Advances in Nutrition; 2019; 10 (supplement): S380-8

4.Atlas R, Hyde B, Maloy S, Colwell R, Rubin C, Daszak P. One Health—Attaining Optimal Health for People, Animals, and the Envir onment. Microbe Mag. 2010 Jan 1;5(9):383–9.

5.Bonilla-Aldana D, Dhama K, Rodriguez-Morales AJ, alDana, K. D, alfonso, J. Revisiting the One Health Approach in the Context of COVID-19: A Look into the Ecology of this Emerging Disease. Advances in Animal and Veterinary Sciences, 2020; 8:1-3Available from: http://nexusacademicpublishers.com/uploads/files/AAVS_8_3_234-237.pdf

6.Ferrinho P, Fronteira I. Developing One Health Systems: A Central Role for the One Health Workf orce. Int J Environ Res Public Health [Internet]. 2023; Available from: https://www.mdpi.com/1660-4601/20/6/4704/pdf?version=1678183320

7.Weatherly C, Carag J, Zahdy S, Morrison M. The mental health impacts of human-ecosystem-animal relationships: A s ystematic scoping review of Eco-, Planetary, and One Health approaches. One Health. 2023; 17: 100621

8. Grace, D., Songe, M. and Knight-Jones, T. 2015. Impact of neglected diseases on animal productivity and public health in Africa. Presentation at the 21st conference of the World Organisation for Animal Health (OIE) regional commission for Africa, Rabat, Morocco, 16-20 February 2015. Nairobi: ILRI

9. Rabinowitz P, Conti l. Links among human health, animal health, and ecosystem health. Annu Rev Public Health [Internet]. 2013; 34:189-204 Available from: https://www.annualreviews.org/doi/pdf/10.1146/annurev-publhealth-03191 2-114426

10.Driga AM, Climate Change 101: How Everyday Activities Contribute to the Ever-Gro wing Issue. Int J Recent Contrib Eng Sci IT [Internet]. 2019; 7: 22-31 Available from: https://online-journals.org/index.php/i-jes/article/download/10031/553 9

11.Arijit C, Charu KG. Gauging the Assessment of Some Anthropogenic Factors Driving Climate- Change. Curr World Environ [Internet]. 2023; Available from: https://cwejournal.org/pdf/Vol18No2/CWE_Vol18_No2_p_614-636.pdf

12.Lahlali R, Taousin M, Salah-Eddine L, et al. Effects on climate change on plant pathogens and host-pathogen interactions. Crop and Environment, 20024; 3: 159-70.

13.Arnell NW. The global-scale impacts of climate change: the QUEST-GSI Project. Climate Change; 2016; 134: 343-52

14.Benjamin D, Por H-H, Budescu D. Climate change versus global warming: Who is susceptible to the framing of climate change? Environ Behav 2017; 49(7):745–770.https://doi.org/10.1177/0013916516664382

15.Swartz MK Taking on Climate Change Through a Health Care Lens. J Pediatr Health Care [Internet]. 2019; 33: 623 Available from: http://www.jpedhc.org/article/S0891524519304894/pdf

16.Bartling M, Bunn C, Castro F, Walz H. Identification of suitable tea growing areas in Malawi under climate change scenarios. Tropentag, 2017 September 20-22